

EXHIBIT A



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EXPERTLY ENGINEERING SAFETY FROM FIRE®

BOBRICK WASHROOM EQUIPMENT, INC.

v.

SCRANTON PRODUCTS, INC.

Civil Action No. 3:14-CV-00853-RDM

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May 13, 2024

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Acronyms and Abbreviations

BOCA	Building Officials Code Administrators
CMS	Centers for Medicare and Medicaid Services
GBA	Gage Babcock & Associates, Inc.
GSA	General Services Administration
HDPE	High-Density Polyethylene
IBC	International Building Code
IFC	International Fire Code
ICC	International Code Council
KOFFEL	Koffel Associates, Inc.
NFPA	National Fire Protection Association
NFSA	National Fire Sprinkler Association
SBCCI	Southern Building Code Congress International
SFPE	Society of Fire Protection Engineers

1 Qualifications and Experience

During the analysis reported herein, I have relied on my education, training, and experience in performing my analysis and formulating my opinions.

I am President and owner of Koffel Associates, Inc. (Koffel). I hold a Bachelor of Science degree in Fire Protection Engineering from the University of Maryland and am a Registered Fire Protection Engineer in numerous states. I am a member of the National Fire Protection Association (NFPA) and the Society of Fire Protection Engineers (SFPE). I serve on a number of technical committees for NFPA and other associations on a variety of fire protection and life safety topics related to health care facilities.

A detailed summary of my qualifications is provided below and a copy of the standard summary of my background and experience, as distributed by Koffel Associates, Inc., is provided in Appendix B. A list of materials considered in forming my opinions in this matter is provided in Appendix A. A list of cases in which I have testified at trial or a deposition as an expert during the past four years is provided in Appendix C. Koffel was compensated at \$325 per hour for my time. My compensation is not contingent on my opinions or the outcome of this lawsuit.

1.1 Education

Upon completion of high school (1974), I enrolled in a five-year, dual degree program at Ursinus College, Collegeville, Pennsylvania. I completed three years of study at Ursinus in a combined Bachelor of Arts and Bachelor of Science in Engineering program. At that time (1977), I transferred to the University of Maryland, Department of Fire Protection Engineering. In 1978, I received a Bachelor of Arts from Ursinus College, and in 1979, I graduated with honors from the University of Maryland, with a Bachelor of Science in Fire Protection Engineering. In addition to my undergraduate degrees, I have completed graduate courses in a Master of Public Administration program at the University of Baltimore and courses in a Professional Master of Engineering in the Fire Protection program at the University of Maryland.

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1.2 Professional History

Upon graduation from the University of Maryland (May 1979), I was employed as an Associate Safety Engineer with Marathon Pipe Line Company in Houston, Texas. In November of 1979, I left Marathon Pipe Line Company to become a fire protection engineer with the Maryland State Fire Marshal's Office in Baltimore, Maryland.

In September 1982, I left the employment at the State of Maryland and became a Staff Engineer with Gage-Babcock & Associates, Inc. ("GBA") in Vienna, Virginia.

In January 1986, I left GBA and started my own firm, Koffel Associates, Inc., which is where I am currently employed. One of the services provided by Koffel Associates is to develop and teach seminars. Currently, I teach seminars for the ICC and NFPA, including seminars on the nonstructural aspects of the International Building Code, NFPA 1, and NFPA 101.

On May 1, 2024, I was appointed as a Visiting Senior Faculty Specialist and Director of the Online FPE Undergraduate Program at the University of Maryland.

In addition to the full-time employment identified above, I have held several part-time employment positions. Starting while I was with the Maryland State Fire Marshal's Office, I became an Adjunct Faculty member of the National Fire Academy, Emmitsburg, Maryland. I also was a part-time lecturer at the University of Maryland in the Urban Fire Studies curriculum and the Open Learning Fire Service Program offered through the University College program at the University of Maryland. I also participated in the development of two of the Open Learning Fire Service Program courses.

I have also been a part-time faculty member at the Reading Area Community College, Reading, Pennsylvania; Montgomery Community College, Rockville, Maryland; and the Department of Fire Protection Engineering, University of Maryland, College Park, Maryland. The courses I have taught have generally involved topics such as building construction, code requirements, fire service administration, and fire protection system design and analysis

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1.3 Honorary Distinctions

While at the University of Maryland, I was elected to Tau Beta Pi, an engineering honorary society (1978) and the Salamander Honorary Fire Protection Engineering Society (1979). In July 1979, I was certified as an Engineer-In-Training by the State of Maryland. In March 1984, I was licensed to practice engineering in the Commonwealth of Virginia. Since that time, I have also become registered as a Professional Engineer in the states of Maryland, New York, Ohio, Pennsylvania, Virginia, and Washington, as well as the District of Columbia.

I served on the Board of Directors of SFPE from 1997 to 2004, serving as the Society's President in 2003. I was awarded Fellow Member grade in the SFPE in 2001 and received the D. Peter Lund Award in 2004 for my contributions to the fire protection engineering profession. In 2012, I received the SFPE President's Award and in 2014, I received the John L. Bryan Mentoring Award.

I also received the NFPA Committee Service Award for distinguished service to the NFPA in the codes and standards development process in 2003 and the NFPA Standards Medal in 2018.

In 2015, I was awarded the University of Maryland, Department of Fire Protection Engineering Distinguished Alumni Award. In 2016, I received the Glenn L. Martin Medal from the A. James Clark School of Engineering at the University of Maryland.

1.4 Involvement in the Codes and Standards Development Process

Over the past 40 years, I have served on numerous NFPA Technical Committees and Committees of the Building Officials Code Administrators (BOCA), International Code Council (ICC), and Southern Building Code Congress International (SBCCI).

With respect to NFPA, I serve, or have served, on the following Technical Committees:

- Technical Committee on Means of Egress (Past Chair)
- Technical Committee on Fire Protection Features
- Technical Committee on Health Care Occupancies (Chair)

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- Technical Committee on Detention and Correctional Occupancies
- Technical Committee on Industrial, Storage, and Miscellaneous Occupancies (Alternate)
- Technical Committee on Alternative Approaches to Life Safety
- Technical Committee on Building Materials (Alternate)
- Technical Committee on Structures and Construction
- Technical Committee on Sprinkler System Discharge Criteria
- Technical Committee on Emergency Communication Systems (Chair)
- Technical Committee on Fire Code (Alternate)
- Technical Committee on Fire Doors and Windows
- Technical Committee on Fire Tests
- Technical Committee on Hazard and Risk on Contents and Furnishings
- Technical Committee on Smoke Management Systems
- Technical Committee on Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems (Past Chair)
- Technical Committee on Commissioning and Integrated Testing
- Technical Committee on Remote Inspections
- Technical Committee on Fire Marshal Professional Qualifications
- Correlating Committee on Automatic Sprinkler Systems (Chair)
- Correlating Committee on Safety to Life (Past Chair)
- Correlating Committee on Health Care Facilities

With respect to the ICC, I served on the IBC (International Building Code) Means of Egress Subcommittee (1999 and 2000). I have also served on the Existing Building Code Development Committee and the ICC Ad Hoc Committee on Installation of Glass in Hazardous Locations (2001). From 2011 to 2016, I served on the ICC Code Technology Committee. Since 2017 I

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have served on the ICC Committee on Healthcare, previously referred to as the Ad Hoc Committee on Healthcare.

I have served on the following Committees:

- BOCA Ad Hoc Committee on Fire Protection Systems (1987-1990)
- BOCA Ad Hoc Committee on High Hazard Occupancies
- BOCA Building Code Changes Committee (1988-1995)
- BOCA Code Interpretation Committee
- SBCCI Special Institutional Occupancies Ad Hoc Committee (1987)
- SBCCI Fire and Life Safety Subcommittee (1990-1992)
- SBCCI Plumbing Code Ad Hoc Committee (1993-1994)
- SBCCI B51-96 Further Study Committee (1996-1997)
- SBCCI B2-97 Further Study Committee (1997-1998)

I have also been retained by both BOCA and NFPA to develop seminars regarding their respective code documents, including the NFPA seminar on *Life Safety Code*® Essentials and *Life Safety Code*® Essentials for Health Care Occupancies, as well as the BOCA seminar on Fire Protection Systems, Means of Egress, and Nonstructural Plan Review. Additionally, I have been an instructor for BOCA in the past, and I am currently an instructor for various code-related seminars for ICC, NFPA, NFSA and SFPE.

2 Background

Koffel was retained by Baker & Hostetler LLP to provide expert consultation and possibly expert testimony in connection with this lawsuit. This report presents my findings and opinions related to the above-referenced matter.

In December 2017, Scranton Products and Bobrick Washroom Equipment, Inc. entered into a Settlement Agreement that was approved by the United States District Court for the Middle District of Pennsylvania in March 2018. Some of the terms of the Settlement Agreement include:

- A shared interest by both Bobrick and Scranton Products in protecting the public, encouraging compliance with applicable codes, and educating market participants, such as architects, specification writers, and contractors, regarding the relevant code requirements.
- A commitment that Scranton Products will complete Initial Product Certification with Intertek for its “2017 Generation 1” high-density polyethylene (“HDPE”) toilet partitions as being NFPA 286 compliant.
- Scranton Products will maintain the Product Labeling Certification for its “2017 Generation 1” HDPE toilet partition product.
- For each and every sale of non-NFPA 286-compliant HDPE toilet partitions, Scranton Products will send the entity that submits the purchase order to Scranton Products a Customer Letter in the form of Exhibit D in the Settlement Agreement.
- Scranton Products will not include anything in its marketing materials or any other document or communication related to the sale of non-NFPA 286 compliant HDPE toilet partitions contradicting the substance of the information in the Customer Letter.

The purpose of this report is to describe the evolution of building codes in the United States with respect to HDPE partitions used as interior finish; to identify the risks presented by the sale and installation of HDPE toilet partitions that do not satisfy the criteria of NFPA 286; and to analyze whether Scranton Products’ communications with its customers concerning NFPA 286 accurately reflect the applicable code requirements and are consistent with the required Customer Letter.

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The report will also address the following two areas of the Settlement Agreement:

- A shared interest by both Bobrick and Scranton Products in protecting the public, encouraging compliance with applicable codes, and educating market participants, such as architects, building owners/managers, specification writers, distributors, and contractors, regarding the relevant code requirements.
- Scranton Products will not include anything in its marketing materials or any other document or communication related to the sale of non-NFPA 286 compliant HDPE toilet partitions contradicting the substance of the information in the Customer Letter.

3 Analysis

3.1 Fire Hazards Associated With Untreated HDPE

As with many other plastic products, fire testing and actual fire experience has determined that the ASTM E84 fire test method does not adequately evaluate the performance of HDPE toilet partitions. Other small scale fire tests, such as ASTM D635, ASTM D1929, and ASTM D2843 are very limited in scope and also do not represent how HDPE partitions will behave under actual fire conditions. Fire tests have been conducted that demonstrate that the heat release rate of Santana untreated HDPE toilet partitions peaked at 3693 kW, a value three times what is needed to cause flashover of a gypsum board lined room that is 8 ft. by 12 ft. by 8 ft.^{1, 2}

Flashover can be defined as a “stage in the development of a contained fire in which all exposed surfaces reach ignition temperature more or less simultaneously and fire spreads rapidly throughout the space.”³ The ability to prevent flashover is an effective life safety strategy to protect the occupants of a building who are not in the room of origin. Of particular concern with respect to toilet partitions is the common scenario in which the restroom opens onto an exit access corridor in occupancies such as assembly and educational occupancies placing a large number of occupants at risk due to a post-flashover fire. The post-flashover fire will likely compromise the tenability of the egress path, rendering one or more egress paths unusable by occupants trying to escape from the fire. In addition, if a fire were to spread to a restroom, the presence of untreated HDPE partitions could rapidly accelerate the growth rate of the fire.

Polyethylene drips when burning which can further increase the spread of fire. Figure 1 is a photo of an untreated HDPE partition in an NFPA 286 fire test.⁴ Note the dripping of the polyethylene down the sides of the partitions. On the floor one can see a pool of melted polyethylene burning to the point that one can barely see the gas burner that is used to conduct the fire test. On a larger scale, multiple high-rise building fires have illustrated the potential for fire spread when polyethylene panels are used. For example, during the February 2015 fire at

¹ Expert Report of David P. Demers, P.E., Santana vs Bobrick, et al, dated May 12, 2000

² In 2006 Comtec acquired Santana Products which was then rebranded to Scranton Products

³ Guide on Methods for Evaluating Potential for Room Flashover, NFPA 555-2021 Edition, Paragraph 3.3.5

⁴ Final Report, SwRI Project No. 01.10085.01.442a and b, October 2004

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the Torch Tower in Dubai Marina, a fire started on the 51st Floor of the 87-story high-rise residential building. A second fire started on a balcony on the 30th Floor, caused by flaming debris from the fire above.⁵



Figure 1

Prior to codes requiring that HDPE products be tested using NFPA 286, the common test used to evaluate the fire performance of HDPE partitions was ASTM E84. The fire test community has recognized that ASTM E84 is not an appropriate test to evaluate all products, especially plastics and textile materials. In the ASTM E84 test, a 24 ft. specimen is placed on the top of the tunnel with flame impingement at one end. Materials such as plastics and textiles, that tend to melt or drip, will typically achieve low flame spread indices.⁶ When those same materials are tested as a vertical wall surface in a room, the materials can result in flashover in the room of origin. The inability of ASTM E84 to accurately evaluate the fire performance of such products is the reason that NFPA 265 and NFPA 286 were developed.

⁵ Lt. Colonel Ali Almutawa, *Case Study for 'The Torch Tower' Dubai Marina*, 2015 AGM & International Conference, The Institution of Fire Engineers, London, United Kingdom, July 2015

⁶ ASTM E84-21a, *Standard Test Method for Surface Burning Characteristics of Building Materials*, Paragraph 1.5

3.2 Development of Code Requirements For HDPE Partitions

Jurisdictions in the USA adopt one or more model codes that are developed by the International Code Council or the National Fire Protection Association. The predominant building code used in the USA is the International Building Code. With respect to a fire code, jurisdictions will typically adopt the International Fire Code or NFPA 1. Depending on the regulatory process in the various states, the codes may be adopted at the state level, local jurisdiction level (e.g., city, county), or both. Both the ICC and NFPA have a well-defined code development process that typically results in a new edition of their respective codes every three years. The requirements for interior finish are found in the building code, the fire code, and in *NFPA 101*.

The definition of “interior wall and ceiling finish” was revised in the 2006 Edition of the IBC to specifically note that “toilet room privacy partitions” are considered an interior wall finish material and therefore, such partitions need to be tested as required for all other interior wall finish materials.⁷ The requirements of the *International Building Code and International Fire Code* were modified in 2009 to require that an HDPE product used as an interior wall or ceiling finish is to be tested using NFPA 286. (IBC 2009; 803.12).

With respect to HDPE materials, the requirements of *NFPA 101[®], Life Safety Code[®]* were revised starting with the 2012 Edition of *NFPA 101*. The revisions included a requirement that an HDPE product that is to be used as an interior wall or ceiling finish is to be tested using NFPA 286. (*NFPA 101-2012*; 10.2.4.7). The 2018 Edition of *NFPA 101* included a new Annex note clarifying that washroom water closet partitions should be considered an interior wall finish. (*NFPA 101-2018*; A.3.3.95.4)

3.3 Adoption Of Code Requirements For HDPE Partitions

Building and fire code requirements are often driven by the occupancy classification of a space within a building. An occupancy classification represents the purpose for which a space within a building is used or intended to be used. With respect to most interior finish materials, the codes require a certain performance, as determined using ASTM E84, based on the occupancy

⁷ IBC, 2006 Edition, Section 802.1

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classification and where the material is being used in the building (exits, corridors, rooms separated from a corridor). In the case of HDPE partitions, the requirements to test the partitions to NFPA 286 is not dependent upon the occupancy classification or the location of the space. Instead, due to the inherit risk associated with HDPE products the test requirements apply to all locations in all occupancies.

The adoption of a building code, fire code, or *NFPA 101* will depend on the regulatory process within that State or jurisdiction.⁸ Our research has indicated that every state in the United States, as well as the District of Columbia, have adopted the 2009 Editions of either the IBC or IFC or the 2012 Editions of NFPA 1 or *NFPA 101*, or more recent editions of the codes referenced, with the exception of Illinois and Kansas.⁹ With respect to Illinois, the ICC website previously indicated that the Illinois Board of Education has adopted the 2015 Edition of the IBC for Pre- K through 12 public education facilities. The ICC website now indicates that effective January 1, 2025 a statewide building code has been adopted in Illinois.¹⁰ It should also be noted that in Illinois, prior to implementation of the statewide building code, and Kansas local jurisdictions have adopted one of the editions of the model codes that contain the newer requirements for HDPE products. For example, in Kansas, Sedgwick County has adopted the 2018 Edition of the IBC and the City of Wichita has adopted the 2018 Edition of the IFC. Larger jurisdictions, such as New York, Chicago, Los Angeles, which historically wrote their own codes, now use a code that is based upon ICC or NFPA codes and all use an edition newer than the 2012 Edition. I have no knowledge of a jurisdiction that has not adopted at least a building code, fire code, or other requirement that does not require HDPE partitions used as an interior finish to be tested in accordance with NFPA286.

The accuracy of these data bases is dependent upon the information being updated regularly and in some instances there may be limitations as to the application of the adopted Code. With respect to the first point, both the ICC and NFPA have regional personnel who monitor the

⁸ It should be noted that NFPA also produces a fire code, referred to as NFPA 1. NFPA 1 requires that facilities meet the interior finish requirements of NFPA 101. As such, if a jurisdiction adopts NFPA 1 instead of the International Fire Code, compliance with the requirements for HDPE partitions to be tested in accordance with NFPA 286 were contained in the 2012 Edition of NFPA 1.

⁹ The source of the information was CodeFinder™.

¹⁰ The source of the information was <https://codes.iccsafe.org/codes/illinois>.

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adoptions of their respective codes and are a reliable source of information regarding those adoptions. With respect to the application of the Code, here are a few examples of instances in which the state adoption may be limited:

- Arizona - The Arizona State Fire Code requires the submittal of plans for new construction, remodeling, alterations, and additions to state and county buildings, public schools, charter and private schools. Construction of ALL occupancy types, except residential dwellings of less than 5 units, located in areas without a locally adopted fire code, must be reviewed for compliance with the State Fire Code by the Office of the State Fire Marshal. The State Fire Code in Arizona is the 2012 Edition of the IFC.¹¹ This is an example in which the State Code applies to certain occupancies but is also a default requirement if the local jurisdiction has not adopted their own code.
- Colorado - Approved building codes and standards are adopted by the Office of the State Architect and other state authorities. The applicable building code is the IBC, 2021 Edition. These minimum requirements are to be applied to all construction at state agencies and institutions of higher education owned facilities.¹² This is an example in which the State Code applies to specific types of occupancies; in this case educational occupancies.
- Delaware – The State Fire Prevention Commission has adopted the 2021 Edition of NFPA 1, effective September 1, 2021.
 - 1.2 Whenever the provisions of any county, city, or local regulation or ordinance are more stringent or impose higher standards than are required by these Regulations, the provisions of such county, city, or local regulation or ordinance shall govern, provided they are not inconsistent with these Regulations and are not contrary to recognized standards and good engineering practices.¹³ This is another example in which the State Code serves as a minimum requirement and local jurisdictions may adopt something more restrictive.

¹¹ <https://dffm.az.gov/az-state-statute-and-fire-code>

¹² https://drive.google.com/file/d/1-u9YBVZyCPmNvKcF3l_3n2X5H8nllfMz/view

¹³ <https://regulations.delaware.gov/AdminCode/title1/700/701.shtml#TopOfPage>

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- Missouri – Missouri does not have a statewide building or fire code that is applicable uniformly across the entire state. However, the Code of Professional Conduct for architects and engineers in the State of Missouri state that:

“(1) For building design, the board shall use, in the absence of any local building code, the 2012 edition of the International Building Code, as the evaluation criteria in determining the appropriate conduct for any professional licensed or regulated by this chapter and being evaluated under section 327.441.2(5), RSMo.”¹⁴

- Nevada - Contrary to what is shown on the ICC website referenced in the Customer Letter, the Nevada State Fire Marshal has adopted the 2018 Editions of the International Building Code and International Fire Code. When a local jurisdiction adopts a code that is in conflict with the State requirements, the more stringent requirements shall apply.¹⁵ As such, even if a local jurisdiction were to adopt a code that does not require HDPE partitions to be tested in accordance with NFPA 286, the Nevada Administrative Code would require HDPE partitions to be tested in accordance with NFPA 286.

The revisions made to the 2012 Edition of the *Life Safety Code* have been adopted by the Centers for Medicare and Medicaid Services (CMS) as a mandatory requirement effective July 5, 2016. As such, any new or existing health care facility that receives funding from CMS is required to meet the requirements for HDPE partitions that were introduced into the 2012 Edition of *NFPA 101*. While not all health care organizations receive funding from CMS, some of those that do not still seek accreditation. Since most Accreditation Organizations have “deemed status” with CMS, they also apply the requirements of the 2012 Edition of *NFPA 101*. Lastly, health care facilities operated by Federal agencies, such as the Department of Veterans Affairs, are required by those agencies to meet the requirements of a more recent edition of *NFPA 101*. In summary, essentially every health care facility in the USA has been impacted by the requirements for HDPE products as they first appeared in the 2012 Edition of *NFPA 101*.

¹⁴ 20 CSR 2030-2.040 Evaluation Criteria for Building Design

¹⁵ Nevada Administrative Code, Section 477.280

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In summary, when a toilet partition manufactured with an HDPE product is installed as an interior finish material in a new or existing building, the HDPE partition is required to be tested in accordance with NFPA 286. The expanded requirement to test newly installed HDPE partitions is the result of jurisdictions adopting newer editions of the ICC and NFPA codes, starting with the 2009 Edition of the IBC and the 2012 Edition of *NFPA 101*.

Over the years, the hazard posed by HDPE products that are not tested to NFPA 286 has continually been recognized by code officials and authorities having jurisdiction. Since the changes in the 2009 and 2012 Editions of the IBC, there have been repeated attempts by industry to eliminate the requirement to test in accordance with NFPA 286 and to rely on testing in accordance with ASTM E84. One such recent attempt was a proposal submitted for the 2021 Edition of the IBC that was Disapproved by the ICC Fire Safety Code Development Committee and subsequently voted for Disapproval by the ICC voting membership. During the hearings for this code change proposal, industry raised concerns about durability and infection control, arguing that they were a more significant issue than the fire risk. However, the Committee and ICC voting membership did not agree.

Another example of the risk is an actual fire at Hoover High School in Glendale, California. The partitions involved were HDPE partitions manufactured by Santana. The fire originated in the Boys Room on the second floor of the building. The smoke produced by the burning Santana HDPE partitions was so thick that the custodial staff was unable to extinguish the fire and the fire department had to extinguish the fire.¹⁶

3.4 Scranton Products Actions Related To Code Requirements

As noted in Section 2.0 of this Report, for each and every sale of non-NFPA 286-compliance HDPE toilet partitions, Scranton Products is required to send the entity that submits the purchase order a “Customer Letter.”¹⁷ The Customer Letter, marketing materials, and customer communications would be expected to encourage compliance with applicable codes and educate

¹⁶ Glendale Fire Department Field Incident Report 97-2866, dated 3/14/1997

¹⁷ Settlement Agreement, VII G (p 29)

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market participants, such as architects, building owners/managers, specification writers, distributors, and contractors, regarding the relevant code requirements. A review of some customer correspondence indicates that this is not widely occurring.

- Kearney High School – In a series of emails, it appears as if the customer is requesting a Class A partition. Mike Nolan responds that “NFPA 286 is the same as a CLASS A rating.”¹⁸ Whereas a Class A product is tested in accordance with ASTM E84 this statement, standing alone, is not educational in nature and could cause confusion amongst the market participants.
- CTEC Independence HS – The correspondence indicates confusion on the part of the customer in that there are references to a flame spread index of 75 (Class B) in a specification that calls for Class C. Neither of which are products that comply with NFPA 286. Other than supplying an unspecified document, the Scranton Products representative does not seem to be familiar with the different fire performance characteristics of the HDPE partitions.¹⁹ In this example, the customer was clearly confused and Scranton Products did not educate the customer regarding the applicable code requirements or educate the customer regarding the differences between products tested to ASTM E84 and NFPA 286.
- Children’s Friend Althea Street – The customer requested Class C partitions but the Fire Marshal indicated that they were not compliant. In lieu of educating the customer about the differences between NFPA 286 and Class B products and the applicable code requirements, Scranton Products responds that the color requested, Charcoal Grey, is available in a Class B partition. According to the Color Texture Brochure currently available on the Scranton Products website, the requested color, Charcoal Grey, is not available as an NFPA 286 product.²⁰ There is indication that the Customer Letter was eventually sent which then led to a change in color.²¹ Had the customer been properly

¹⁸ 3DP-DHP-0000007 and 3DP-DHP-0000008

¹⁹ 3DP-REN-0004393 – 3DP-REN-0004396

²⁰ 3DP-V3-000001 - 3DP-V3-000008

²¹ 3DP-V3-000019 – 3DP-V3-000020

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educated by Scranton Products, the need to change the color would have been identified earlier.

- Builders Specialty Service, Inc. – In a series of emails concerning requirements in New Mexico, a person I understand to be a Scranton Products sales representative makes various statements calling the requirement for HDPE to pass NFPA 286 as being “ridiculous” and incorrectly stating that new partitions in existing buildings do not need to meet the NFPA 286 requirements. There is no indication that Scranton Products corrected or otherwise responded to the sales representative’s incorrect statements.²²
- Burke ES – In a series of emails between the Architect and Contractor, allegations are made that Scranton Products “knowingly provided non-compliant materials” even though the owner required code compliant materials. The specification specifically required the manufacturer to certify in writing that the products were code compliant. There is no indication that Scranton Products provided such certification. There are references to multiple projects in which partitions needed to be replaced.²³
- Corps of Engineers – Despite referencing the need to comply with *NFPA 101*, the customer incorrectly states that *NFPA 101* permits compliance using either NFPA 286 or ASTM E84.²⁴ There is no evidence that Scranton Products educated the customer that *NFPA 101* contained the same test requirements as the IBC despite the fact that the customer stated that *NFPA 101* applied in lieu of the local building code.
- Deer Valley Elementary School – The Architect indicates a need to “look for another product because Phoenix had adopted the 2012 Edition of the IFC.”²⁵ The Scranton Products representative indicates that there may be some options regarding compliance with the HDPE requirements. Other than seeking approval of an alternative compliance approach, there are no other options provided in the 2012 Edition of the IFC. This statement would clearly result in confusion in the market.
- University of California, Irvine – In a series of emails Renco Sales representatives (a distributor for Scranton Products) continue to propose the use of a Class C or Class B

²² 3DP-BSS-0000018 – 3DP-BSS-0000020

²³ 3DP-GAR-0000021 – 3DP-GAR-0000029

²⁴ 3DP-GLC-0000066 – 3DP-GLC-0000088

²⁵ 3DP-REN-0003463 and 3DP-REN-0003463

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product. In one email, the Renco Sales representative asks the Architect for “any documentation or emails stating that our Class ‘C’ was not up to standard for UCI.” The Architect finally responded “it is not up to the 2016 CBC standards per section 803.1.2.” This chain of emails was then forwarded to Nick Suraci (AZEK Company) asking which Scranton Products materials comply with the CBC requirements. Mr. Suraci responded “That equals our standard material so everything is available to you.”²⁶ In this instance the Scranton Products representative was not promoting compliance and in fact had to be educated by the Architect as to what the code requirements were. Furthermore, the response by AZEK Company is inaccurate in that the Scranton Products has a “standard product” that is not tested to NFPA 286 and not all colors are available in the product tested to NFPA 286.

- Brea Olinda USD/Olinda ES – In an email chain six months earlier than the University of California, Irvine emails Nick Suraci (AZEK Company) responds to Renco that “Our standard material isn’t fire rated, we do offer Class B, Class A and NFPA 286 in limited colors.²⁷ The fact that this email chain occurred six months prior to the University of California, Irvine emails and is a project located in the same state (California) demonstrates a level of confusion amongst Scranton Products representatives. It should also be noted that the CTEC Independence HS project previously cited occurred a year after this project and involved AZEK and Renco Sales personnel. Despite what had occurred on these and other projects in the State of California over a 12-month period, Scranton Products representatives appear to be confused or unaware of the applicable code requirements. In this exchange, Mr. Suraci offered no information to help the distributor or customer understand how or why the customer should be choosing among Class B, Class A, and NFPA 286 HDPE partitions.
- Shaffield Building – The email chain starts with a response indicating that the architect is making a new color selection from the fire rated options. Scranton Products responds that the color chosen only comes in the Standard and Class B materials and then asks if the customer wants to change to a Class B material. David Shaffield then responds that there is confusion in the specification where it calls for Class B in one line and

²⁶ 3DP-REN-0000072 – 3DP-REN-0000077

²⁷ 3DP-REN-0000137 – 3DP-REN-0000139

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NFPA 286 in the next. This is similar to the sample specification currently available on the Scranton Products website. Scranton Products responds by saying the specification calls for a Class B rating for smoke spread but NFPA 286 for the fire rating. The customer then responds saying that they want to keep the selection as Class B.²⁸ In addition to the above customer correspondence, I reviewed the Scranton Products website. While the website material consistently references “fire-rated” products, there is little information regarding NFPA 286 compliance. The only test report found on the website is the test to document compliance with the tunnel test as adopted in Canada. The Hiny Hiders specification available on the website references Class A and Class B as a fire resistance requirement and NFPA 286 and ICC Class B (which is a tunnel test result) as material fire ratings. Where the specification refers to color options, there is no distinction between which are available as NFPA 286 compliant materials and which are not. The specification does not identify the need for the design professional or customer to select the appropriate fire performance. Furthermore, the specification does not identify which colors are provided for partitions with differing fire performance characteristics. This could result in confusion in the market by a specification requiring a certain color that is not provided for a product with a certain fire performance. There is also no indication that the applicable code is likely to require a product tested to NFPA 286.

Since 2006, the IBC has clearly defined toilet privacy partitions as an interior finish of a building. In March 1990, Joseph M. Jardin in his capacity as a Life Safety Engineer at NFPA opined that based upon the judgment of the Authority Having Jurisdiction, toilet partitions could be regulated as an interior wall finish.²⁹ Despite this, Scranton Products sells an HDPE toilet privacy partition as a non-treated HDPE partition. Scranton Products representatives describe this standard product as not meeting any of the ASTM E84 or NFPA 286 fire test criteria.³⁰

The above-referenced projects were previously discussed in my Expert Report dated October 29, 2021. Generally speaking, I have not performed a similar review of more recent Scranton

²⁸ 3DP-SBS-0000023 – 3DP-SBS0000026

²⁹ Expert Report of David P. Demers, P.E., Santana vs Bobrick, et al, dated May 12, 2000

³⁰ Deposition of Mark Tachino dated October 22, 2021, page 27, lines 5-10

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Products projects. However I was recently provided with project information for the Harrisburg Federal Courthouse project. While the project file I have to date may not be complete, the project documentation reviewed to date demonstrates the following failures in the process by which the toilet partitions were specified, ordered, and procured. The correct partitions were not supplied until several years after the initial order, after considerable review by the design team, consultants, and General Services Administration (GSA), and they were delivered at a higher cost to the taxpayers of the US.

A project specification was prepared by Ennead Architects and reads as follows:³¹

C. Performance Requirements:

1. **Fire Resistance:** Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:
 - a. Class A flame spread/smoke developed rating, tested to ASTM E84.
 - b. Class B flame spread/smoke developed rating, tested to ASTM E84.
2. **Material Fire Ratings:**
 - a. National Fire Protection Association (NFPA) 286: Pass.

Note that this project specification is virtually identical to the SECTION 10155 for SCRANTON PRODUCTS HINY HIDERS HDPE TOILET COMPARTMENTS that is available on the Scranton Products website and reads as follows³²:

A. Performance Requirements:

1. **Fire Resistance:** Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:

**** NOTE TO SPECIFIER ** Delete class not required.**

- a. Class A flame spread/smoke developed rating, tested to ASTM E84.
 - b. Class B flame spread/smoke developed rating, tested to ASTM E84.
2. **Material Fire Ratings:**
 - c. National Fire Protection Association (NFPA) 286: Pass.
 - d. International Code Council (ICC): Class B.³³

³¹ SP-3EA_00157

³² Downloaded from the Scranton Products website, October 30, 2023 and slightly modified from the version produced as SP-3EA_00159

³³ This last item has apparently been added since the version that was available on the Scranton Products website in 2016 and produced as SP-3EA_00159.

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Scranton Products Sales Order 747359, dated 8/14/2019 indicates that Scranton Products was well aware that the product was being shipped for a project identified as the Harrisburg Federal Courthouse and that the product would be a Class B product³⁴. At that time, Scranton Products knew, or should have known, that the GSA requirement for the project was that HDPE partitions needed to be tested in accordance with NFPA 286.

Despite this, on March 1, 2022, a revised Purchase Order was issued for an NFPA 286 compliant product.³⁵ This was after a series of emails in February 2022 between GSA and Jensen Hughes in which it is clear that GSA was confused as to whether the product installed was in compliance with the GSA requirements. It should be noted that there is no evidence indicating that GSA, as the customer, was provided with the Customer Letter by either Scranton Products or their distributor with the original Sales Order in 2019.

In summary, there is still confusion in the marketplace being caused by Scranton Products specification template, color charts in their product brochures, and submittals.

3.5 Scranton Products includes in its marketing materials or any other documents or communications related to the sale of non-NFPA 286 compliant HDPE toilet partitions content contradicting the substance of the information in the Customer Letter.

In the Harrisburg Federal Courthouse project, the Architect notes that the Scranton Products Specification “seems to indicate that the same product is compliant with both test standards.”³⁶

1.5 QUALITY ASSURANCE

Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.

Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.

³⁴ Scranton Products Sales Order 747359, dated 8/14/2019

³⁵ SP-3EA_00147

³⁶ SP-3EA_00157

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Materials: Doors, panels and pilasters shall be constructed from High Density Polyethylene (HDPE) resins. Partitions shall be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. All plastic components shall be covered with a protective plastic masking.

Performance Requirements:

1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:

** NOTE TO SPECIFIER ** Delete class not required.

- a. Class A flame spread/smoke developed rating, tested to ASTM E84.
- b. Class B flame spread/smoke developed rating, tested to ASTM E84.
2. Material Fire Ratings:
 - c. National Fire Protection Association (NFPA) 286: Pass.
 - d. International Code Council (ICC): Class B.

Section 1.5.D of the Scranton Products Specification is confusing for several reasons:

1. The specification refers to fire resistance and then refers to ASTM E84. “Fire resistance” is a defined term in both the ICC and NFPA codes and fire resistance is not determined using ASTM E84 as a test standard. The section then goes on to refer to Class A and Class B with a note to the specifier to delete the class that is not required.
2. Scranton Products Specification Paragraph 1.5.D.2.c then refers to NFPA 286 as a material property and the specification states that the material passes NFPA 286. However, the product brochures refer to an NFPA 286 compliant product, and Class B product, and a Standard product which has not been tested in accordance with ASTM E84 or NFPA 286. The Scranton Products Specification makes no reference to the Standard product. The fact that both the ICC codes and NFPA codes state that toilet privacy partitions are an interior finish material, there is no market for a product that has not been tested in accordance with ASTM E84 or NFPA 286. Why is this product still in their product brochure?
3. In the Harrisburg Federal Courthouse order, Scranton Products provided the Customer Letter to Hostetter Supply, who is the distributor for Scranton Products.³⁷ There is no indication that the Customer Letter was actually provided to the GSA, who is the actual customer purchasing the product, when the Sales Order was executed in 2019. For that

³⁷ SP-3EA_00137

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reason, the noncompliance of the partitions ordered was not identified by GSA until February 2022. As previously noted, Scranton Products knew the partitions were to be installed in a Federal courthouse and therefore knew, or should have known, that the GSA requirements for the partitions to be tested in accordance with NFPA 286 would apply.

4. The Hiny Hiders Partition Brochure indicates that for some color/finish combinations the products are listed in the sections identified as tested in accordance with NFPA 286, Class B in accordance with ASTM E84, or a not-tested Standard product. However, the brochure does not clarify whether Scranton Products actually offers three different performance products in the same color. It is apparent from the email correspondence in the Harrisburg Federal Courthouse product that since the product was a White – Orange Peel product that it was thought to have complied with the GSA criteria to be tested in accordance with NFPA 286.
5. The Hiny Hiders Partition Brochure indicates that custom colors are available and some of the case studies, such as the Scranton University Athletic Complex, illustrate the use of custom colors but there is no reference as to what tests were performed to evaluate the material properties of the custom color partitions.

3.6 Scranton Products Actions Related To Shared Interest To Protect the Public

Despite the previously referenced code requirements in the ICC and NFPA codes, Scranton Products has repeatedly attempted to weaken those requirements. If those attempts were successful, newer editions of the codes would offer a reduced level of safety to the public, an action that is in conflict with the Settlement Agreement in which Scranton Products committed to protecting the public. In addition, Scranton Products has incorrectly represented that the provisions in the IBC are permissive and do not require that HDPE partitions be tested in accordance with NFPA 286.³⁸ This misrepresentation is in direct conflict with the Settlement Agreement in which Scranton Products committed to encouraging code compliance.

³⁸ Case 3:14-cv-00853-RDM Document 714 Filed 09/01/22 Page 25 of 33

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Examples of code development activities in which Scranton Products has attempted to reduce the level of public safety by not requiring HDPE partitions to be tested in accordance with NFPA 286 include, but are not limited to:

- FS133-12 – This is a proposal submitted to the ICC to revise the requirements in the 2015 Edition of the IBC such that NFPA 286 testing of HDPE partitions would only be required if the test specimen exhibited melting or dripping when tested in accordance with ASTM E84. The proposal was submitted by Jesse Beitel, Hughes Associates, representing Scranton Products. The proposal was Disapproved by the Fire Safety Code Development Committee who stated that such partitions should be tested to NFPA 286 without an option to use ASTM E84. Despite this outcome, Jesse Beitel, Hughes Associates, representing Scranton Products, submitted a Public Comment to again offer the option of using ASTM E84 when the test specimen did not melt or drip in the test. The Public Comment was also Disapproved and no change was made between the 2012 and 2015 Editions of the IBC regarding the requirement to test HDPE partitions in accordance with NFPA 286.

It should be noted that both the Public Proposal and Public Comment referenced above and submitted on behalf of Scranton Products clearly state that the 2012 Edition of the IBC REQUIRES that HDPE toilet partitions be tested to NFPA 286, contrary to the position stated in this matter that the IBC does not require; but rather, permits testing to NFPA 286.

- G11-24 This proposal was submitted to revise the 2027 Edition of the IBC by several proponents including Dale Wheeler, Systech Fire Protection LLC, representing Scranton Products. The proposal proposes to delete the reference to toilet privacy partitions from the definition of interior wall and ceiling finish which is more drastic than Scranton Products' previous attempts to relax the IBC requirements. The impact of this proposal, if approved, would be to eliminate the need for any fire testing of the partitions; NFPA 286 and ASTM E84, regardless of the materials used to construct the partitions.

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One of the co-proponents, John Poole, representing ASI Southeast, states in his reason statement:

“For HDPE toilet room privacy partitions to be compliant with IBC regulations and pass the NFPA 286 room corner test, manufacturers have had to consider many reformulations, which in turn increases the cost of this product with no historical fire loss data to justify these increased costs.”

While Mr. Poole was not representing Scranton Products, he is representing another manufacturer of HDPE partitions and he acknowledges that HDPE partitions need to pass NFPA 286 to be compliant with the IBC. Again, this is contrary to Scranton Products' position in this litigation that the IBC does not require; but rather, permits testing to NFPA 286.

At a time period of approximately 03:45 of the hearings on G11-24, Mr. Wheeler testified that the current IBC requirements require HDPE partitions to be tested in accordance with NFPA 286, which is contrary to Scranton Products position in this litigation that the IBC does not require; but rather, permits testing of NFPA 286.³⁹

While the official results of the hearing are not yet posted to the ICC website, the Safety Code Development Committee voted for Disapproval of the code change proposal (12-0). It should be noted, however, that this is not yet a final action because there are several more steps in the process to developing the 2027 Edition of the IBC.

Scranton Products claims that “as many as fourteen jurisdictions **permit** but do not **require** the use of NFPA 286 testing...” Whereas the jurisdictions referenced do not modify the applicable paragraphs in the IBC, this position is contrary to the position Scranton Products has taken for years in the ICC Code Development process (as noted

³⁹ icc-hearingvideos-public.s3.amazonaws.com/2024/GroupA/CAH/Track1/G11-24.mp4

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above).⁴⁰ In addition, I reached out to two of the states referenced that have interpretation processes and received the following responses.

- In September 2022 I submitted the following question to the State of Ohio⁴¹:
Whereas Section 803.1.2 is written in permissive language (“shall be permitted”) and Section 803.9 refers to Section 803.1.2, is it the intent of the Ohio Fire Code that HDPE partitions used as an interior finish must be tested in accordance with NFPA 286?

Ohio Response: I am District Chief Brad Merillat. I received your question regarding interior finish classification(s). With your question, posted below, you asked if OFC 803.9 requires testing to NFPA 286 rather than ASTM E84 testing. The short answer is yes. Given OFC 803.9 references and refers one to a specific section, that section would then be applicable and required. The rationale for utilizing NFPA 286 is as follows: (*Excerpt from IFC Commentary, 2015 edt.*)

- Likewise in September 2022 I posed a similar question to the State of North Carolina and received the following response⁴²:

To answer your question:

Section 803.9 required high-density polyethylene or polypropylene that is used as an interior finish required to be tested in accordance with NFPA 286 which is known as a “room corner” test in accordance with Section 803.1.2. Since Section 803.1.2 was the only reference in Section 803.9, it is my opinion that NFPA 286 is the only code compliant testing method for HDPE and PP.

- Whereas the fourteen jurisdictions that Scranton Products referenced do not modify the applicable provisions of the IBC or IFC, one can also refer to the IBC Commentary, which was referenced in the response from the State of Ohio. The IBC Commentary (2015 Edition) for Paragraph 803.9 states:

⁴⁰ Scranton Products Inc.’s Response To Bobrick Washroom Equipment, Inc.’s Third Motion To Enforce Settlement Agreement filed 09/01/22

⁴¹ Email from Bradley Merillat to William Koffel dated September 22, 2022

⁴² Email from David B Rittlinger to William Koffel, dated September 21, 2022

803.9 High-density polyethylene (HDPE) and polypropylene (PP). Where high-density polyethylene or polypropylene is used as an interior finish it shall comply with Section 803.1.2.

❖ High-density polyethylene (HDPE) and polypropylene (PP) are thermoplastic materials that, when burned, give off considerable energy and produce flammable liquid fires. Recent full-scale room corner tests using NFPA 286 have demonstrated a significant hazard with some of these (HDPE) materials. Extensive flammable liquid fires occurred during the tests. The Steiner tunnel test, however, is not a suitable measure of the performance of this material because the calculation of flame spread index does not take into account the unique hazards known for this material. Therefore, these materials are required to be tested in a full-scale room corner test in accordance with Section 803.1.2.

For emphasis, the last sentence says “Therefore, these materials are required to be tested in a full-scale room corner test in accordance with Section 803.1.2.”

The Scranton Products position that the IBC provisions to test HDPE partitions in accordance with NFPA 286 is permissive and not mandatory is based upon choosing selective paragraphs in the Code to produce a misinterpretation that is not supported by:

- The IBC Commentary
- Interpretations received from two of the states, which were the only two states contacted
- Code change proposals submitted by code consultants retained by Scranton Products
- Code Development hearing testimony provided by code consultants representing Scranton Products
- ICC Code Development Committee statements on proposed changes stating that HDPE partitions are to be tested in accordance with NFPA 286.

All of the above references sources clearly state that when an HDPE partition is an interior wall or ceiling finish, the partition is required to be tested in accordance with NFPA 286.

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4 Opinions

Based on my review of the facts in this case, the available materials, my background, experience and training, and my work completed to date, the following is a summary of my opinions, which are submitted within a reasonable degree of engineering certainty, as further detailed in this report. Each opinion below incorporates the reasons provided in every other opinion, as well as the information in the Background and Analysis sections above.

I reserve the right to revise or amend these opinions and conclusions if additional information becomes available and if further analysis is performed. Any explanatory exhibits for trial will be produced in the future, as appropriate.

- 1. The fire hazards associated with HDPE products remain the same today as prior to the Settlement Agreement.**
- 2. Code requirements adopted in the US require toilet partitions of HDPE products to comply with NFPA 286. HDPE partitions not tested to NFPA 286 present fire hazards that have been deemed unacceptable by the drafters of current model codes and by lawmakers in the US. The requirement applies not only to new construction but it also applies to new partitions installed in existing buildings.**
- 3. A review of customer correspondence indicates instances in which the customer ordered product that was not compliant with NFPA 286. The same correspondence indicates instances in which Scranton Products failed to promote code compliance, failed to educate the customer as envisioned by the Settlement Agreement, and engaged in communications that were not consistent with the applicable codes and contradict the substance of the information in the Customer Letter. These kinds of communications have perpetuated or resulted in confusion and uncertainty in the marketplace. In the Harrisburg Federal Courthouse, there is no documentation indicating that the Customer Letter was actually sent to the customer and not just the distributor of the product.**
- 4. Given the status of code adoptions in the United States, an appropriate response by Scranton Products to any customer orders or inquiries for HDPE partitions that are not tested to NFPA 286 would be: "Due to the inherent fire risk associated with HDPE**

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partitions, in the US HDPE partitions are required to be tested in accordance with NFPA 286. Prior to filling your order for partitions that do not meet that requirement, it is recommended (language could be stronger) that you consult with the building and fire officials to verify that the partitions do not need to be tested in accordance with NFPA 286.” Although the appropriate specific response to any given customer inquiry would depend upon the facts of that instance and on what the customer was asking, in general terms, a response like the one outlined here would serve to educate the marketplace, promote code compliance, and reduce the likelihood of confusion. There is no indication that Scranton Products has ever offered this type of educational response to advance the goals of the Settlement Agreement, and in fact its representatives seem unwilling to take any responsibility to provide accurate and complete information to customers.

- 5. The Scranton Products Specification that is provided on their website should be revised to state that all HDPE partitions need to be tested in accordance with and pass the NFPA 286 test. The references to Class B in accordance with ASTM E84 and the ICC should be deleted. This is clearly the standard of care applied throughout the USA to adequately address public safety.**
- 6. Scranton Products marketing materials, including product brochures, color charts, and product specifications, need to be revised to eliminate all references to ASTM E84, Class A, Class B, and “fire-rated” products**
- 7. Scranton Products marketing materials, including product brochures, color charts, and product specifications, need to be revised to eliminate all references to Standard Colors since such partitions are considered an interior finish and need to be tested as required for an interior finish material.**
- 8. Scranton Products marketing materials, including product brochures, color charts, and product specifications, need to be revised to limit custom color options to those that are tested to NFPA 286.**
- 9. Scranton Products has not acted to protect the public, as required by the Customer Letter, by advocating for reducing the requirements in the ICC codes, in particular the most recent proposal to eliminate any requirement to test their products to any nationally recognized fire test standard.**

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10. Scranton Products should ensure that the Customer Letter is received by the actual customer, directly or through the distributor, and not just the party that submitted the Purchase Order. Again, the Harrisburg Federal Courthouse project is an instance in which this did not occur, resulting in a significant period of time until the correct product was shipped to the project and at a higher cost to the taxpayers of the US.

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5 Limitations

The findings presented herein are made to a reasonable degree of engineering and scientific certainty. We have made every effort to perform an accurate and thorough investigation. If new data or information becomes available or there are perceived omissions or misstatements in this report regarding any aspect of those conditions, we ask that they be brought to our attention as soon as possible so that we have the opportunity to fully address them.

Appendix A – Material Reviewed

- Settlement Agreement and Mutual General Release – Case 3:14-cv-00853-RDM
- Expert Report of David P. Demers, P.E., Santana vs Bobrick, et al, dated May 12, 2000
- Guide on Methods for Evaluating Potential for Room Flashover, NFPA 555-2021 Edition, Paragraph 3.3.5
- Final Report, SwRI Project No. 01.10085.01.442a and b, October 2004
- Lt. Colonel Ali Almutawa, *Case Study for 'The Torch Tower' Dubai Marina*, 2015 AGM & International Conference, The Institution of Fire Engineers, London, United Kingdom, July 2015
- ASTM E84-21a, *Standard Test Method for Surface Burning Characteristics of Building Materials*, Paragraph 1.5
- IBC, 2006 Edition, Section 802.1
- CodeFinder™
- <https://codes.iccsafe.org/codes/illinois>
- <https://dffm.az.gov/az-state-statute-and-fire-code>
- https://drive.google.com/file/d/1-u9YBVZyCPmNvKcF3l_3n2X5H8nlfMz/view
- <https://regulations.delaware.gov/AdminCode/title1/700/701.shtml#TopOfPage>
- <https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=7488&fileName=8%20CCR%201507-31%20%20A2>
- 20 CSR 2030-2.040 Evaluation Criteria for Building Design
- Nevada Administrative Code, Section 477.280
- Glendale Fire Department Field Incident Report 97-2866, dated 3/14/1997
- Settlement Agreement, VII G (p29)
- Scranton Products Customer Communications
 - 3DP-DHP-0000007 and 3DP-DHP-0000008
 - 3DP-REN-0004393 – 3DP-REN-0004396
 - 3DP-V3-000001 - 3DP-V3-000008
 - 3DP-V3-000019 – 3DP-V3-000020
 - 3DP-BSS-0000018 – 3DP-BSS-0000020
 - 3DP-GAR-0000021 – 3DP-GAR-0000029
 - 3DP-GLC-0000066 – 3DP-GLC-0000088
 - 3DP-REN-0003463 and 3DP-REN-0003463
 - 3DP-REN-0000072 – 3DP-REN-0000077
 - 3DP-REN-0000137 – 3DP-REN-0000139
 - 3DP-SBS-0000023 – 3DP-SBS0000026
- Expert Report of David P. Demers, P.E., Santana vs Bobrick, et al, dated May 12, 2000
- Deposition of Mark Tachino dated October 22, 2021, page 27, lines 5-10
- SP-3EA_00137
- SP-3EA_00147
- SP-3EA_00157
- SP-3EA_00159

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- Section 10155 for Scranton Products Hiny Hiders HDPE Toilet Compartments, Scranton Products website, October 30, ,2023
- Scranton Products Sales Order 747359, dated 8/14/2019
- Case 3:14-cv-00853-RDM Document 714 Filed 09/01/22 Page 25 of 33
- <https://icc-hearingvideos-public.s3.amazonaws.com/2024/GroupA/CAH/Track1/G11-24.mp4>
- Scranton Products Inc.'s Response To Bobrick Washroom Equipment, Inc.'s Third Motion To Enforce Settlement Agreement filed 09/01/22
- Email from Bradley Merillat to William Koffel dated September 22, 2022
- Email from David B Rittlinger to William Koffel, dated September 21, 2022
- <https://www.scrantonproducts.com/>

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Appendix B – Summary of Background and Experience

Specialty Fields and Professional Competence

Fire protection systems, analysis, design, testing, and maintenance

Fire protection and life safety surveys, including the use of Fire Safety Evaluation Systems

Building, life safety, and fire code analysis

Fire protection risk and systems safety analysis

Fire protection and life safety course development and instruction

Community fire defense planning

Participation in the codes and standards development processes

Product research and testing

Forensic engineering, including fire and/or explosion loss analysis and investigation and litigation support

Fire Protection and Life Safety Analysis: Assembly, educational, health care, detention, residential, business, mercantile, and industrial.

Fire Protection System Design: Automatic suppression, fire alarm, and smoke control.

Community Fire Defense Plans: Water supply and distribution systems, operations analysis, incident reporting systems, community risk analysis, and fire defense planning.

Training and Education: Vocational and college level course design, development of activities and educational methodology, and identification of support media.

Major Projects and Activities

- Developed and taught instructional units for courses in plan review, code management, fire service and the community, fire prevention organization and management, system analysis, fire service administration, fire safety surveys, fire risk analysis, fire suppression techniques, building construction, fire safety evaluation systems for health care occupancies, hydraulic calculations, fire protection system design, and system maintenance.
- Faculty for NFPA *Life Safety Code*®, Automatic Sprinkler System Seminar series, and National Fire Alarm Code. Has taught seminars in Argentina, Australia, Canada, England, France, Germany, Indonesia, Italy, Japan, Luxembourg, Mexico, Netherlands, Philippines, Portugal, Qatar, Saudi Arabia, Singapore, Sweden, Switzerland, UAE, and USA. Faculty for many nonstructural building code and fire code seminars for the ICC.
- Performed a risk assessment of a large facility in Trinidad. Assisted in a fire risk assessment and fire suppression assessment of the Atlantic LNG (Liquefied Natural Gas) Facility in Trinidad and Tobago. Made recommendations to Atlantic LNG in order to eliminate the nuisance alarms and improve inspection, testing, and maintenance.
- Provided code consulting and IBC Code evaluation services for the on-going River Protection Project - Waste Treatment Plant (RPP-WTP) project at the DOE, Hanford site in Washington State, in which liquid waste is being converted to solid waste through a vitrification process. Reviewed the application of portions of the International Building Code, 2000 Edition, in order to define the significant differences between the Uniform Building Code, 1997 Edition and the International Building Code, 2000 Edition and to identify some of the ramifications of using the IBC for this particular project. Also consulted on special fire proofing and penetration protection applications.
- Developed and taught the SFPE seminar on the SFPE Engineering Guide to Fire Risk Assessment.
- Conducted licensure, certification, accreditation and engineering surveys for Veterans Affairs, state-, and privately-owned health care facilities, including the use of the Fire Safety Evaluation System (FSES).
- Provided engineering support for the design of fire protection improvements and systems for various Smithsonian Institution Museums, Department of Defense, Department of Energy, GSA facilities, and V.A. Medical Centers.
- Provided fire protection engineering and code consulting services for new construction and renovation projects including, health care, detention/correction, hotel/office complexes, day-care, and historic buildings.
- Conducted fire protection engineering surveys of twelve multi-building federal detention facilities.
- Conducted fire protection engineering surveys, consulting, and design services for aircraft hangars, petro-chemical facilities, water treatment facilities, semiconductor industry facilities, and other high hazard uses.

- Provided fire protection engineering consulting to various manufacturers and producers relative to risk analysis and product development and testing, including developing non-standardized test procedures. For example, evaluated fireproofing analysis from product manufacturer to determine the required fireproofing thickness needed for custom structural steel members that are outside of the size-to-weight limitations of the manufacturer's fireproofing product listing. Made recommendations to the design/build contractor on proper application of fireproofing to protect the custom structural steel members to provide the required fire-resistance rating.
- Experienced in the use of CFAST and FDS.
- Provided expertise and testimony to numerous parties involved in the code change and legislative processes.
- Analyzed, designed, and provided post-design services for fire protection systems in several multi-building hospital complexes, residential buildings, and industrial facilities.
- Developed fire protection provisions for a model code for rehabilitation of existing structures.
- Provided expert testimony on fire protection, life safety, building regulations and engineering practices.
- Provided building and fire protection consulting services for the BWI Airport D-E Connector multi-phase \$125 million project. This new construction and renovation project consisted of the design of a new 225,000 sq ft, 2-story security check point and concourse connector in the airport. Our services included surveys, building code, fire code, and life safety analysis, sprinkler and fire alarm/voice evacuation assessments and drawings, as well as Construction Administration services.

Professional Employment History

Koffel Associates, Inc. – Senior Director, Special Projects, 2022 - Present

Koffel Associates, Inc., President, 1986 to 2022

Gage-Babcock & Associates, Inc., Senior Fire Protection Engineer, 1984-1986; Staff Engineer, 1982-1984

Office of the Fire Marshal, State of Maryland, Fire Protection Engineer, 1979-1982

Marathon Pipe Line Company, Associate Safety Engineer, 1979

University of Maryland, Lecturer and Tutor, 1980-2001 (part-time)

National Fire Academy, Adjunct Faculty and Course Content Specialist, 1980 to present (part-time)

Academic Background, Registrations, and Memberships

B.S., Fire Protection Engineering, University of Maryland, College Park, MD, 1979

B.A., Ursinus College, Collegeville, PA, 1978

Registered Professional Engineer: Arizona (75856), DC (PE10740), Maryland (14089), New York (76648), Ohio (55110), Pennsylvania (PE053140E), Virginia (014634), Washington (25946)

Adjunct Faculty: Owensboro Community & Technical College

Visiting Senior Faculty Specialist and Director of Online FPE Undergraduate Program: University of Maryland

Board of Directors: AFAA (President, 2016); SFPE (President, 2003); Board of Governors: American Association of Engineering Societies

Member: ASAE, ASHE, ASTM, ICC, IFMA, NFPA, and SFPE

Member: Several Committees of the *Life Safety Code*, NFPA 101 and NFPA 5000 including: Chair Life Safety Correlating Committee; Technical Committees on: Emergency Communications Systems (Chair); Means of Egress (Past Chairman); Fire Protection Features; Health Care Occupancies (Alternate); Detention and Correctional Occupancies; Industrial, Storage, and Miscellaneous Occupancies (Alternate); Building Materials (Alternate); Structures and Construction; Sprinkler System Discharge Criteria; Fire Code; Special Equipment, Processes and Hazardous Materials; Fire Doors and Windows; Fire Tests; Hazard and Risk on Contents and Furnishings; Smoke Management Systems; Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems (Past Chair); Fundamentals of Fire Alarm and Signaling (Alternate); Fixed Guideway Transit and Passenger Rail Systems; Contents and Furnishings; Fire Marshal Professional Qualifications; and Alternative Approaches to Life Safety (Past Chair). Correlating Committees on: Automatic Sprinkler Systems (Chair); Safety to Life (Past Chair), and Health Care Facilities

Several Committees of the ICC: Ad-Hoc Battery and Energy Storage; Means of Egress and Existing Buildings Code Development Committees; Fire Code Action Committee; Ad-Hoc Committee on Installation of Glass in Hazardous Locations; Code Technology; Committee on Healthcare. IBC Means of Egress Subcommittee; American Society for Hospital Engineering Codes and Safety Committee; Tau Beta Pi; West Friendship Volunteer Fire Department, and Advisory Committee on Structural Safety of Dept. of V.A. Facilities, Board of Director for the National Council of Governments on Building Codes and Standards.

Recipient: The Society of Fire Protection Engineers - Grade of Fellow (2001)
 National Fire Protection Association Committee Service Award (2003)
 D. Peter Lund Award (2004)
 Hats off Award (2010)
 International Code Council Affiliate Award (2010)
 SFPE President's Award (2012)
 John L. Bryan Mentoring Award (2014)
 University of Maryland Distinguished Alumni (2015)
 Glenn L. SFPE David A. Lucht Lamp of Knowledge Award (2015)
 Martin Medal, A. James Clark School of Engineering (2016)
 ASHE – Grade of Senior (2018)
 National Fire Protection Association Standards Medal (2018)

Technical Publications and Presentations

"Fire Prevention Organization and Management", Open Learning Fire Service Program, Ginn Custom Publishing, 1982 (Co-author)

"The Community and Fire Threat", Open Learning Fire Service Program, Ginn Custom Publishing, 1983 (Co-author)

"Estimating the Effectiveness of State-of-the-Art Smoke Detectors and Automatic Sprinklers on Life Safety in Health Care Occupancies", Technical Document Series 055894, American Society for Hospital Engineering of the American Hospital Association, July 1987 (Author)

"Establishing Threshold Limits for Fire Suppression Systems", The Building Official and Code Administrator, Nov/Dec 1988 (Co-author)

"Estimating the Effectiveness of State-of-the-Art Smoke Detectors and Automatic Sprinklers on Life Safety in Health Care Occupancies", International Fire Protection Engineering Institute, Ottawa, Canada, May 1989

"Fire Warning and Safety Systems", Management and Compliance Series, Vol. 4, American Hospital Association, Chicago, IL, 1989 (Co-author)

"But It Complies with the Code", NFPA Fall Meeting, November 1989

BOCA National Building Code/1987 and 1990 Commentary, *Life Safety Code* Handbook (NFPA), Automatic Sprinkler System Handbook (NFPA), and Fire Protection Handbook (NFPA) (contributing author)

"In Compliance", NFPA Journal Monthly Column

"Is America Still Burning?" U.S. House of Representatives Committee on Science, Space and Technology, Hearing on Fire Safety in Multi-Family Housing, July 28, 1988

"Performance Based Codes - Reality or Fiction", Fire Safety Conference on Performance Based Codes, Federal Institute of Technology, Zurich, Switzerland, 1996

"A Roundtable Discussion Regarding the International Practice of Fire Protection Engineering", Fire Protection Engineering, Summer 2003

"Performance-Based Design Analysis Seattle Transportation Center", Case Study, 5th International Conference on Performance-Based Codes and Fire Safety Design Methods, European Commission Facilities, Luxembourg, October 2004

"Reliability of Automatic Sprinkler Systems", Firestop Contractors International Association web site, March 2004

Building Construction and Safety Code™ Handbook NFPA 5000™, 2003 Edition (Commentary for Chapter 15 and 46)

"What is a Registered Interior Designer?", Interior Design, 2003 (specific date unknown)

"Performance-Based Codes and Design", Presented at the American Bar Association Forum on the Construction Industry, New Orleans, LA, April 2005

Department of Veterans Affairs Audio/Video Conference on Fire and Smoke Compartmentation – 2005

“Reliability of Automatic Sprinkler Systems”, Presented at The Fire Protection Research Foundation Symposium on Fire Suppression and Fire Detection, January 2006

“A Methodology to Analyze the Concept of Balanced Design”, Fire Protection Engineering Magazine, Spring 2006

“Performance-Based Design Analysis Amigone Retirement Community”, Case Study, 6th International Conference on Performance-Based Codes and Fire Safety Design Methods, Tokyo, Japan, June 2006

“Designing Fire Protection Systems with Maintenance in Mind”, Medical Construction and Design, July/August 2006

“Fire and Smoke Dampers”, Medical Construction and Design, January/February 2007

“Fire Protection Engineers in the Regulatory Process—A Roundtable Discussion”, Fire Protection Engineering, Spring 2007

“Fire Protection Engineering in Existing Buildings: From Rehabilitation Codes to Performance-Based Design”, Fire Protection Engineering, Spring 2010

“International Approaches to Performance Based Codes”, SFPE Annual Conference, New Orleans, LA, October 2010

“NFPA 101 – Health Care 2000 to 2012”, ASHE Annual Conference, Seattle, WA, July 2011

“Sprinkler Systems Using Anti-freeze: What Is The Problem? What Are The Solutions”, SFPE Annual Conference, Portland, OR, October 2011

“NFPA Code Compliance for Health Care Facilities Webinar”, November 2011 and March 2012

“The Oops Factor”, NFPA Journal, November/December 2011

“Don’t Let Your Fire Alarm Project Go Down This Road”, NFPA Fire and Life Safety Conference, Orlando, FL, December 2011

“Smoke and Mirrors”, NFPA Fire and Life Safety Conference, Orlando, FL, December 2011

“An Update and Comparison of the Fire Alarm Requirements in the 2012 Editions of the IBC and NFPA 101”, December 2011

“Deficiencies + Equivalencies”, NFPA Journal, January/February 2012

“Critical Factors in Determining Evacuation Strategy”, International Fire Protection, February 2012

“Application of Fire Risk Assessment”, Minnesota Chapter, SFPE, February 2012

“Analysis of Sprinkler Design Criteria for High Air Movement Areas”, Suppression, Detection and Signaling Symposium, Fire Protection Research Foundation, NFPA Suppression/ Detection Conference, March 2012

“But I Have an Existing Building”, Life Safety Digest, Summer 2012

“The Latest in Antifreeze Sprinkler Systems”, Fire Protection Engineering Emerging Trends, September 2012

“Joint Commission Update/Compliance”, 30th Annual CASHE Conference, September 2012

“Inspection, Testing, and Maintenance for Healthcare”, NEHES 2012 Fall Conference, October 2012

“Life Safety in Health Care Facilities According to NFPA 101: Life Safety Code”, NFPA-APSEI Fire & Security, Estoril, Portugal, December 2012

“Are You Ready for This: Risk Assessment in The Codes”, SupDet 2013, Orlando, FL, March 2013

“Preparing for Your Accreditation Survey—An Update on The Joint Commission Process”, 2013 Baltimore/Washington DC Area Healthcare Symposium, College Park, MD, March 2013

“Protecting Fire Rated Openings: Modern Techniques”, SFPE Atlanta Chapter Conference, March 2013

“Suite Talk – Is Your Facility Benefiting from Suites?”, Inside ASHE, April 2013

“Improving Fire Sprinkler Reliability”, NFSA Conference, April 2013

- "Project Coordination in Health Care Facilities", NFSA Conference, April 2013
- "Key Nonstructural Changes to 2012 IBC", Consulting-Specifying Engineer, May 2013
- "NFPA 25-2014: What Is New and Different?", 2013 NFPA Conference and Exposition, Chicago, IL, June 2013
- "Codes and Standards: A Word of Caution", Inside ASHE, Summer 2013
- "Q&A: A Balance Approach, ASHE Advocacy Report, Summer 2013
- "Managing Smoke in a Health Care Facility", Engineered Systems, July 2013
- "A Word of Caution – New Facilities vs. Existing Facilities, Inside ASHE, July 2013
- "Code Compliance for Healthcare Facilities: How Will the 2012 Edition of NFPA 101® Help?", NCHEA Annual Conference, August 2013
- "Fire Protection and Life Safety Construction in Healthcare", 31st Annual CASHE Conference, September 2013
- "Case Study – Water Mist Fire Suppression System", FS-World.com, Fall 2013
- "Why the Sprinkler System Inspection, Testing, and Maintenance Provisions of NFPA 25 Are Getting a Thorough Once-Over", NFPA Journal, November/December 2013
- "Barrier Smarts", Co-authored with George Mills, *NFPA Journal*, January/February 2014
- "Improving Sprinkler System Reliability", Suppression, Detection, and Signaling Research and Applications Symposium 2014, February 2014
- "NFPA 25", Fire Inspectors Association of Broward County, February 2014
- "NFPA 112", Fire Inspectors Association of Broward County, February 2014
- "Maintaining Your Fire Protection System—Who is Responsible?", *International Fire Protection*, March 2014
- "The Special Life Safety Needs in Health Care Buildings", *International Fire Protection*, March 2014
- "The Future of Health Care Facility Codes and Standards", 2014 International Summit & Exhibition on Health Facility Planning, Design & Construction, March 2014
- "Ageless Compliance: Designing to Ensure Compliance for Years to Come", 2014 International Summit & Exhibition on Health Facility Planning, Design & Construction, March 2014
- "NFPA 92 Defines Design, Testing of Smoke Control Systems", Co-author, Nicholas Sealover, *Consulting-Specifying Engineer*, March 2014
- "What Is the Impact of NFPA 101-2012?", 46th Annual General Meeting and Seminar Program, IAHSS, San Diego, CA, May 2014
- "NFPA 25 As A Means to Improve Sprinkler System Reliability", Fire Sprinkler International 2014, London, May 2014
- "Adoption and Implementation of NFPA Codes and Standards in the Middle East", 2014 NFPA Conference and Exposition, Las Vegas, June 2014
- "IBC Chapter 10: Means of Egress", Lorman Webinar Series, June 2014
- "Proper Barrier Management Starts with Using Proper Terms", *Life Safety Digest*, Summer 2014
- "Joint Commission – Inspection Preparation/Compliance Update", 32nd Annual C.A.S.H.E. Seminar/Exhibition, Hershey, PA, September 2014
- "Engineering Considerations of NFPA 101", Consulting-Specifying Engineer, September 2014
- "Overview of Fire Pumps and Water Storage Tanks" Koffel Associates Webinar, November 2014
- "Maintaining Sprinkler Systems as they Age", FPE Emerging Trends e-Newsletter, November 2014

- "Fire Protection Requirements for Health Care Facilities - An Overview of NFPA 99", *Fire Protection Engineering*, Quarter 1, 2015
- "Proper Fire Protection System Design", Inside ASHE, Spring 2015
- "Fire Safety Teamwork and Effective Communication", IFP Magazine, March 2015
- "Evaluating Occupant Load Factors for Ambulatory Health Care Facilities", Co-author, Kristin Steranka, The Fire Protection Research Foundation March 2015
- "Interpreting NFPA 72", Consulting-Specifying Engineer, April 2015
- "Inspection and Maintenance of Fire Protection Systems", IFP Magazine, June 2015
- "Fire Engineering Versus Prescribe Fire Protection", IFP Magazine, June 2015
- "NFPA 80 – Fire Doors and Windows" Koffel Associates Webinar, June 2015
- "Improving Fire Safety Performance", HFM Magazine, July 2015
- "Protecting Our Schools," Consulting-Specifying Engineer, October 2015
- "2018 Edition of the IBC," Life Safety Digest, Winter 2015
- "Designing with NFPA 101-2015," Consulting-Specifying Engineer, January/February 2016
- "NFPA 101, Life Safety Code® and Building Design" Koffel Associates Webinar, February 2016
- "Understanding the Codes: NFPA 101 Requirements", Inside ASHE, Summer 2016
- "CMS Adopts the 2012 Edition of NFPA 101", Life Safety Digest, Summer 2016
- "IBC Chapter 10: Means of Egress" Lorman Webinar Series, June 2016
- "The Future of Professional Engineers: Training and Mentoring", Consulting-Specifying Engineer, July 2016
- "Balancing Passive, Active Fire Protection" Consulting-Specifying Engineer, August 2016
- "CMS Adoption of the 2012 Edition of NFPA 99 and What it Means for Health Care Facilities" ASHE Webinar, September 2016
- "A Roundtable Discussion Regarding Residential Fire Safety", Q2 2016, Issue 70 of Fire Protection Engineering Magazine
- "Applying NFPA 101 in Mission critical Facilities", Consulting-Specifying Engineer, January/February 2017
- "Assessing Wireless Fire Alarm Systems", Consulting-Specifying Engineer, July 2017
- "Outdoor Storage of Wooden Pallets: Are You in Compliance with New Codes?", National Wooden Pallet & Container Association Webinar, May 2018
- "Understanding the Fire Safety Requirements in NFPA 99-2012", Consulting-Specifying Engineer, June 2018
- "Key Concepts Associated with Performing a Risk Analysis for Mass Notification Systems" The Center for Campus Fire Safety Webinar, June 2018
- "Test Your Code Knowledge" The Center for Health Design Webinar, June 2017/September 2018
- "Fire and Life Safety: Detection, Notification, and Suppression Systems" Consulting-Specifying Engineer Webinar, October 2018
- "Project FAIL-SAFE", Life Safety Digest, Winter 2018 Volume 2
- "Existing Building Code Essentials: Based on the 2018 International Existing Building Code®", Co-author, Clay P. Aler, International Code Council, January 2019
- "The Evolution of Fire Protection Engineering", Fire Protection Engineering Magazine, January 2019, Issue #81
- "Door Inspection and Maintenance", Health Facilities Management, March 2019, Vol. 32 Issue 2
- "Know the Updates to NFPA 72-2019", Consulting-Specifying Engineer, March 2019

"Understanding Recent Door Inspection and Maintenance Codes", Health Facilities Management, Co-author, Elizabeth C. Keller, March 2019

"Developing an NFPA 92 Design Analysis". Consulting-Specifying Engineer, May 2019

"Existing Health Care Systems and Facilities – Applying NFPA 99, Health Care Facilities Code", NFPA Conference & Expo, June 2019

"Conducting Large Scale Internal Disaster Drills" NFPA Conference & Expo, June 2019

"NFPA 13, Standard for the Installation of Sprinkler System – Test Your Code Knowledge", NFPA Conference & Expo, June 2019

"Data Collection for Inspection, Testing, and Maintenance", NFPA Conference & Expo, June 2019

"NFPA 25-2020, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems", NFPA Conference & Expo, June 2019

"What You Don't Know About Fire Protection Systems That May Haunt You in The Future", BOMA International Conference & Expo, June 2019

"Test Your Code Knowledge – An Interactive Q&A Discussion of Regulatory Codes", ASHE 56th Conference, July 2019

"Analysis of Door Latch Failures and Recommendation of Mitigation and Compliance", ASHE 56th Conference, July 2019

"Just Ask ASHE Codes and Standards Forum, ASHE 56th Conference, July 2019

"Fire Protection Systems and Safety Layering", ASHE 56th Conference, July 2019

"Automated Equipment Inspection and Testing", ASHE Health Facilities Management Magazine, September 2019

"Fire and Life Safety: Notification and Communication Systems" Consulting-Specifying Engineer Webcasts, October 2019

"Test Your Code Knowledge: Designing and Effective Healthcare Facility", 2019 Healthcare Design Expo & Conference, November 2019

"FCIA & Code Development – Part 1 – Code Development Past to Now", FCIA Firestop Industry Conference & Trade Show – FIC '19, November 2019

"Life Safety Code Update and Considerations", Healthcare Life Safety Symposium, November 2019

"NFPA 101, Life Safety Code (2012) Essentials for Health Care Occupancies", NFPA 101 Health Care Seminar, November 2019

"FCIA Virtual Education & Committee Action Conference" Firestop Contractors International Association Webinar, April 2020

"Remote Fire Protection Inspections During the COVID-10 Crisis" Koffel Associates Webinar, April 2020

"Just Ask ASHE" ASHE Webinar, April 2020

"Healthcare Facilities Virtual Symposium – National Experts Address Current Conditions" Specified Technologies Webinar, April 2020

"COVID-19: Alternate Care Sites and Temporary Construction" Koffel Associates Podcast, April 2020

"COVID-19: Operational Considerations" Koffel Associates Podcast, April 2020

"COVID-19: Resources Available to the Healthcare Community" Koffel Associates Podcast, April 2020

"Outdoor Storage of Wooden Pallets: Ongoing Compliance Efforts & Next Level Information" National Wooden Pallet & Container Association Webinar, May 2020

"Remote Inspection: What It Is and What It Isn't Power Hour", SFPE Webinar, June 2020

"Application of NFPA 101 in Health Care Facilities (2012 Edition)", APPA Virtual Training, July 2020

"Koffel Talk – What You Need to Know About NFPA 13 and NFPA 25", APPA Webinar, August 2020

- "NFPA 101®, Life Safety Code® (2018) Essentials", NFPA Virtual Training, August 2020
- "Koffel Talk – NFPA 101® - Life Safety Code®", APPA Webinar, August 2020
- "Application of Fire Risk Assessment", SFPE Virtual Seminar, September, October 2020
- "Why is Fire & Life Safety Compliance Important in Healthcare Facilities?", Smart Infrastructure Summit & Expo, October 2020
- "Just Ask ASHE Code and Standards Forum", ASHE Annual Virtual Conference, October 2020
- "A Look at the 2024 Code Cycle and Proposals", FCIA Firestop Industry Hybrid Conference & Trade Show, October 2020
- "Sprinkler System Support Analysis", ASHE Management Monographs", Co-author, Rosalie Wills and Lennon Peake, October 2020
- "Review of NFPA 101 and IBC", AHCA Virtual Seminar, November 2020
- "Principles of Fire Protection Engineering", SFPE Virtual Seminars, November, December 2020
- "Innovations in Life Safety", Johnson Controls, Inc. Webinar, December 2020
- "COVID Surge", Life Safety Consortium, LLC, December 2020, Volume 1, Issue 1
- "Best Practices for Mass Notification System Risk Assessment", University of MD Department of Fire Protection Engineering in collaboration with Automatic Fire Alarm Association Virtual Seminars, January 2021
- "NFPA 915 – Remote Inspections", SFPE Virtual Webinar, February 2021
- "Fire Protection System ITM: Challenges and Solutions", Koffel Associates Webinar, February 2021
- "NFPA 101 and COVID-19", Consulting-Specifying Engineer, February 2021
- "Principles of Fire Protection Engineering", SFPE Virtual Webinar, May 2021
- "The Burn Podcast: Beyond Firestop, Episode 8", Specified Technologies, Inc., August 2021
- "Test Your Code Knowledge – An Interactive Q&A Discussion of Regulatory Codes" ASHE Annual In-Person Conference, August 2021
- "ICC Committee on Health Care Update" (Co-presenter), ASHE Annual Virtual Conference, August 2021
- "Healthcare Operations in COVID-19 and Fire Life Safety Challenges", Fire & Safety India Expo Virtual Expo, August 2021
- "Low Flammable Gases: What's Changing in Codes, Standards, and Fire Response", (Co-author), SFPE Q2 2021, Issue #90, August 2021
- "How Has the World Trade Center Impacted the Practice of Fire Protection Engineering", Fire Protection Engineering, Q3 2021, Issue #91
- "Fire Safety, Unvented Attics, and Spray Foam", American Chemistry Council's Spray Foam Coalition, September 2021
- "Designing Fire/Life Safety System in Health Care Buildings", Consulting Specifying Engineer Webcast, October 2021
- "Risk Analysis for MNS – Requirements, Challenges, and a Case Study", SFPE Annual Conference & Expo, October 2021
- "Application of Fire Risk Assessment", SFPE Annual Conference & Expo Post-Conference Seminar, October 2021
- "Water-Based Systems Designer Workshop and Water Supply Analysis and Hydraulic Calculations" NFPA Classroom Training, October 2021
- "NFPA 101, Life Safety Code (2021) Essentials Live Virtual Training", NFPA, November 2021
- "A Look at the 2024 Code Cycle and Proposals", FCIA Firestop Industry Hybrid Conference & Trade Show, November 2021
- "Applying Fire/Life Safety Codes During/After COVID", APPA Facilities Symposium, November 2021
- "NFPA 13, Installation of Sprinkler System (2019)" NFPA Classroom Training, December 2021

"NFPA 20 Stationary Pumps for Fire Protection (2019)" NFPA Classroom Training, December 2021

"NFPA 25, Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems (2020)" NFPA Classroom Training, December 2021

"Application of Risk Assessment", SFPE Professional Development Seminars, January 2022

"NFPA 72, National Fire Alarm and Signaling Code (2019)", NFPA Classroom Training, January 2022

"Commissioning and Transitioning Your Project to the Owner", PDC Summit, March 2022

"Fire and Life Safety Detection System", Consulting – Specifying Engineer, April 2022

"Principle of Fire Protection Engineering", SFPE Virtual Seminar, April – May 2022

"NFPA 101, Life Safety Code (2021) Essentials", NFPA Virtual Training, May 2022

"A Look at the 2024 Code Cycle and Proposals", FCIA Education & Committee Action Hybrid Conference, May 2022

"Inspection, Testing, and Maintenance: What the Data Tells Us", 2022 NFPA Conference & Expo, June 2022

"Managing Life Safety Program" and "Commissioning and Transitioning Your Project – What You Should Expect", ASHE 2022 Annual Conference, July 2022

"Managing Life Safety Program", ASHE Live Online Training, August 2022

"How to Resolve "Design vs. Life Safety Code" Conflicts in Behavioral Health Facilities", The Center for Health Design Icons and Innovators Webinar Series, August 2022

"Fire Protection Engineering: Challenges in Storage", SFPE Symposium, September 2022

"Principles of Fire Protection Engineering", Principle of Fire Protection Engineering, October 2022

"FCIA Barrier Management Symposium", MOSHE Annual One-Day Seminar, October 2022

"Remote Inspections, Tests, and Monitoring Fire Protection Systems", Facilities Manager, November-December 2022

"Higher Education Laboratories and the International Fire Code", Facilities Manager, January/February 2023, Volume 39, Number 1

"Effective Safety Features Begin with Facility Design", HFM Magazine, March 2023

"Best Practices for Mass Notification System Risk Assessment", University of Maryland Department of Fire Protection Engineering in collaboration with the Automatic Fire Alarm Association Training, March and April 2023

"Fire Protection Features – From Design to Transition to Ownership", Texas Association of Healthcare Facilities Management and Specified Technologies, Inc. – San Antonio Life Safety Symposium, June 2023

"NFPA 101 2024: Adopting the Newest Edition", NFPA Conference & Expo, June 2023

"Using Data Analysis to Take ITM to the Next Level", NFPA Conference & Expo, June 2023

"Managing Life Safety: The 2012 Edition", ASHE Annual Conference, August 2023

"Fire Protection Features – From Design to Transition to Ownership", 2023 TAHFM Life Safety Symposium, September 2023

"Lessons Learned to Reduce Your Liability Risks", AFSA's Annual Convention, September 2023

"Ask the Experts Panel", AFSA's Annual Convention, September 2023

"It's A Code, Code World", Fire Industry Conference & Trade Show 2023, October 2023

"Fire, Life Safety: Integrating Fire and Life Safety System Testing", Webinar, Consulting Specifying Engineer Webinar, October 2023

"Managing Life Safety – NFPA 101, 2012 Edition" ASHE Live Online Training, November 2023

News Media Activities

CNN Sunday Morning Interview regarding the Station Night Club Fire Incident – February 23, 2003

ABC Prime Time Special on Night Club Safety – October/November 2003

CBS Interview on Wired Glass – April 8, 2004

Sky Radio Interview on Fire Protection Engineering – January 2005

Associated Press Interview on Insulating Skin on High-Rises has Fueled Fires Before in London – June 2007

Fox 25 News Interview on Lowell Apartment Fire – July 2014

ABC 15 News Interview on Arizona Stadiums, Concert Venues Rack up Fire Code Violations – February 9, 2023

May 13, 2024

Appendix C – Expert Work

Client	Engineer	Court	Docket Number	Date of Loss	Date of Deposition Testimony	Date of Court Testimony	Full Name of Case	Job Summary
Cozen O'Connor	William Koffel	Circuit Court for Anne Arundel County	C-02-CV-19-000018	17-Dec-16	17-Nov-19	N/A	CH Realty VII - JLB MF Annapolis Admiral, LLC v. Castle Sprinkler and Alarm, Inc.	Water damage due to frozen sprinkler system.
Greenberg Taurig, L.L.P.	William Koffel	Superior Court of Fulton County, Georgia	2018CV306160	N/A	N/A	N/A	M.C. Dean, Inc. v. Metropolitan Atlanta Rapid Transit Authority	Fire protection system design review.
Borden Ladner Gervais, LLP	William Koffel	Ontario Superior Court of Justice	CV-14-515262	4-Nov-12	NA	N/A	CI Financial Corporation and Onyx-Fire Protection Services, Inc., Hidi Raie Consulting Engineers Inc., Paul & Douglas Sprinklers LTD and 1138289 Ontario Limited o/a Durham Central Fire Systems	Analysis of a fire protection system failure.
Stevens & Lee, P.C.	William Koffel	US District Court for the Eastern District of Pennsylvania	5:19-ca-02782-EGS		15-Jan-21	10-May-21 / 11-May-21	Tower Health, f/k/a Reading Health System; PI One, LLC, n/k/a Brandywine Hospital, LLC, PI Two, LLC, n/k/a/ Chestnut Hill Hospital, LLC; PI Three, LLC, n/k/a/ Jennersville Hospital, LLC; PI Four, LLC, n/k/a Phoenixville Hospital, LLC; PI Five, LLC, n/k/a Pottstown Hospital, LLC; PI Six, LLC, n/k/a Tower Health Enterprises, LLC; and PI Seven, LLC, n/k/a Tower Health Medical Group Holding Company, LLC v. CHS/Community Health Systems, Inc.; Pennsylvania Hospital Company, LLC; and Pottstown Hospital Company, LLC.	Failure to maintain building construction type requirements for an existing health care occupancy.
White and Williams, L.L.P.	William Koffel	Circuit Court of Maryland for Montgomery County	484383-V	6-Jan-18	27-Jul-21	N/A	Farmers Insurance Exchange a/s/o Vivek Gupta v. Southland Insulators of Maryland, Inc. d/b/a Devere Insulation Company	Frozen sprinkler pipe resulting in failure of the piping system resulting in water damage.
Baker & Hostetler LLP	William Koffel	United States District Court for the Middle District of Pennsylvania	3:14-CV-00853-RDM		18-Nov-21	16-Dec-21 / 17-Dec-21	Bobrick Washroom Equipment, Inc. v. Scranton Products, Inc.	Describe the evolution of building codes in the United States with respect to HDPE partitions used as interior finish; to identify the risks presented by the sale and installation of HDPE toilet partitions that do not satisfy the criteria of NFPA 286; and to analyze whether Scranton Products' communications with its customers concerning NFPA 286 accurately reflected the applicable code requirements and were consistent with the required Customer Letter.

Client	Engineer	Court	Docket Number	Date of Loss	Date of Deposition Testimony	Date of Court Testimony	Full Name of Case	Job Summary
Hinshaw & Culbertson LLP	William Koffel	Circuit Court of the City of St. Louis State of Missouri	1822-CC00647	28-Jun-14	1-Feb-22		Equis Hospitality Management, L.L.C., v. Western States Fire Protection Company D/B/A National Fire Suppression and Century Fire Sprinklers, Inc. and Allied Tube & Conduit Corporation	Installation of dry fire suppression system installed incorrectly resulting in part of the dry sprinkler system bursting causing extensive property damage.
Ralls Gruber & Niece LLP	William Koffel	Superior Court of the State of California County of San Mateo	20-CIV-02854		18-Nov-22		Skanska-Shimmick-Herzog, a Joint Venture v. Santa Clara Valley Transportation Authority, and Does 1-50, inclusive and Related Cross-Actions	Analysis of fire alarm system issues involving tracks, new stations and wayside facilities.
Kasdan Turner Thomson Booth LLP	William Koffel				3-Jan-23		Lucent, Frame & Focus Homeowners Association v. Shea Homes Limited Partnership	Conduct site survey to identify defects and determine if conditions are in compliance with construction documents and applicable codes.
Bellnunnally Attorney & Counselors	William Koffel	United States District Court for the Northern District of Illinois Western Division	3:19-cv-50122		7-Jul-23		Firebloc IP Holdings, LLC v. Hilti, Inc. and RectorSeal, LLC	Evaluate whether firestop systems or devices need to be approved by code officials and tested in accordance with ASTM International and Underwriter Laboratories to be code compliant.
Kasdan Turner Thomson Booth LLP	William Koffel				2-Nov-23		Lucent II Homeowners Association v. Shea Homes Limited Partnership, et al.	Conduct site survey to identify defects and determine if conditions are in compliance with construction documents and applicable codes.